National Energy Board

Reasons for Decision

Westcoast Energy Inc.

GH-3-92

July 1992

Facilities

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Recital and Appearances

IN THE MATTER OF the *National Energy Board Act* ("the Act") and the regulations made thereunder;

AND IN THE MATTER OF an application by Westcoast Energy Inc. for an Order pursuant to section 58 of Part III of the Act, for the Southern Mainline Looping Project;

AND IN THE MATTER OF Hearing Order GH-3-92.

HEARD at Calgary, Alberta on 25, 26, 27 and 28 May 1992.

BEFORE:

C. Bélanger	Presiding Member
A. Côté-Verhaaf	Member
R.L. Andrew	Member

APPEARANCES:

J. Lutes	Westcoast Energy Inc.
A.S. Hollingworth	Independent Petroleum Association of Canada
P.E. Pyron	Northwest Industrial Gas Users
N.W. Boutillier	Alberta & Southern Gas Co. Ltd.
A.G. Menzies	Alberta Natural Gas Company Ltd.
F. Basham	BP Resources Canada Limited
P. Krenkel	Canadian Hydrocarbons Marketing Inc.
R.C. Beattie S. Lamont	CanWest Gas Supply Inc.
P.M. Colwell	Enco Gas Ltd.
D.W. Rowbotham	Enserch Development Corporation
C.W. Sanderson	Mobil Oil Canada
T.M. Sutliff	Northwest Pipeline Corporation

C. Havers	NOVA Corporation of Alberta
K.L. Meyer	Pan-Alberta Gas Ltd. and Northwest Pacific Energy Marketing Inc.
E.S. Decter	Shell Canada Limited
G.A. Britton	Western Gas Marketing Limited
W.M. Moreland	Alberta Petroleum Marketing Commission
J. Syme J. Hanebury	National Energy Board

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Abbreviations

Act	*National Energy Board Act*
Amoco	Amoco Canada Petroleum Ltd.
APMC	Alberta Petroleum Marketing Commission
B.C.	British Columbia
BC Gas	BC Gas Inc.
Bcf	billion cubic feet
Board, NEB	National Energy Board
CanWest	CanWest Gas Supply Inc.
CPA	Canadian Petroleum Association
DFO	Department of Fisheries and Oceans
EARP Guidelines Order	Environmental Assessment and Review Process Guidelines Order
EIL	Environmental Issues List
FERC	(U.S.) Federal Energy Regulatory Commission
Grand Valley	Grand Valley Gas Company
HIPCO	Huntingdon International Pipeline Corporation
IPAC	Independent Petroleum Association of Canada
Inverness	Inverness Resources Inc.
Joint Venture	Vancouver Island Gas Joint Venture
Kern River	Kern River Gas Transmission
km	kilometre(s)
LDC(s)	local distribution company(ies)
m	metre
m^3	cubic metre

m^3/d	cubic metres per day
MMcfd	million cubic feet per day
Mobil	Mobil Oil Canada
MELP	B.C. Ministry of Environment, Lands and Parks
MOF	B.C. Ministry of Forests
NEB, Board	National Energy Board
Northwest	Northwest Pipeline Corporation
NWIGU	Northwest Industrial Gas Users Association
O.D.	outside diameter
PCEC	Pacific Coast Energy Corporation
PNG	Pacific Northern Gas Ltd.
Penn West	Penn West Petroleum Ltd.
TransCanada	TransCanada PipeLines Limited
U.S.	United States of America
Sierra	Sierra Power Company
Westcoast	Westcoast Energy Inc.

Chapter 1

Introduction

1.1 The Facilities Application

Westcoast Energy Inc. ("Westcoast") filed an application dated 31 December 1991 with the National Energy Board ("the Board" or "NEB"), pursuant to section 58 of Part III of the *National Energy Board Act* ("the Act"), for authorization to construct additional facilities on its Southern Mainline.

The facilities, known as the Southern Mainline Looping facilities, would consist of approximately 32.69 km (20.32 miles) of 914 mm (36 inch) O.D. pipeline loop to be constructed at four locations along Westcoast's Southern Mainline which is an existing 762 mm (30 inch) O.D. residue gas pipeline extending from Westcoast's Compressor Station No. 2 at Willow Flats to a point on the international boundary between Canada and the United States near Huntingdon, British Columbia ("B.C."). The proposed expansion, at an estimated cost of $39,477,000, would enable Westcoast to provide 2 465 $10^3m^3/d$ (87 MMcfd) of additional capacity to serve both domestic and export markets.

1.2 The Hearing

Having received a request from the Independent Petroleum Association of Canada ("IPAC") to hold a public hearing to consider Westcoast's application, the Board decided to seek comments from other parties. The Board received comments from twelve parties, eight of whom supported IPAC's request for a public hearing. In calling for a public hearing, IPAC and Mobil Oil Canada ("Mobil") expressed concern regarding, among other things, Westcoast's method of forecasting long-term gas supply and demand for gas in the domestic and export markets served off the Westcoast system. Westcoast and one of the parties filing comments were opposed to holding a public hearing. Having considered the views of parties, the Board decided to convene a public hearing to consider Westcoast's application.

1.3 Environmental Screening

The Board conducted an environmental screening of the applied-for facilities in compliance with the *Environmental Assessment and Review Process Guidelines Order* ("the EARP Guidelines Order") insofar as there was no duplication with the Board's own regulatory process. The Board's findings in respect of the environmental effects and directly related social effects of the applied-for facilities are set out in Chapter 5 of these Reasons for Decision.

Gas Supply

2.1 Estimates of Gas Reserves

Westcoast provided estimates of proved gas reserves and undiscovered potential (trend gas) to demonstrate the adequacy of overall gas supply in northeast British Columbia. The Deep Basin and Ring-Border supply areas were excluded since gas from these areas is directed to NOVA Corporation of Alberta's system.

Table 2-1

Comparison of Estimates of Remaining Established Gas Reserves[1] 10^9m^3 (Tcf)

	Westcoast[2]	NEB
Established Reserves	194 (6.8)	205 (7.2)

1 As of 31 December 1990.

2 Westcoast's Application Amendment No. 2 included estimates of 1991 production which yielded remaining proved reserves as of 31 December 1991 of approximately 179 10^9m^3 (6.3 Tcf).

Westcoast initially provided estimates of proved gas reserves as of 31 December 1990 of approximately 194 10^9m^3 (6.8 Tcf). Westcoast adjusted this estimate to account for 1991 gas production resulting in an estimate of remaining proved reserves of about 179 10^9m^3 (6.3 Tcf). Westcoast indicated in its application that part of the remaining gas supply was analyzed in support of projects such as the Tommy Lakes pipeline. The Board notes that Westcoast's estimate of proved reserves appears to include some estimates of probable reserves. In this respect, Westcoast's proved reserves appear to be generally equivalent to the Board's established reserves category.

In its analysis of Westcoast's estimate of gas supply as of 31 December 1990, the Board recognized approximately 950 pools, almost all of which are in British Columbia. Of these pools, 476 are in the producing category. The Board's review of these producing pools indicates remaining established reserves of 133 10^9m^3 (4.7 Tcf). In the producing pool category, approximately 101 10^9m^3 (3.6 Tcf) of the Board's estimate of remaining reserves are contained in 65 large pools, each with initial established reserves in excess of 1 000 10^6m^3 (35 Bcf). The remainder of the 950 pools is in the non-producing category. The Board's estimate of established reserves for non-producing pools is 72.1 10^9m^3 (2.5 Tcf). From the non-producing category, there are nine previously defined large pools representing an established reserves estimate of 17.9 10^9m^3 (0.6 Tcf).

In summary, the Board's estimate of total remaining established reserves as of 31 December 1990 is approximately seven percent higher than Westcoast's estimate. The discrepancy in estimates of total reserves is due primarily to the cumulative effect of small differences in geological and engineering parameters for a large number of pools.

2.2 Undiscovered Potential

An assessment of undiscovered potential (trend gas) is integral to Westcoast's forecast of natural gas reserves additions for various supply areas. For the large supply areas, Westcoast based its assessment on historical gas finding rates, whereas for the smaller, less developed areas, Westcoast based its estimates of undiscovered potential on an average of proved reserves per well combined with its projection of industry activity.

Westcoast estimated various annual rates of potential additions that totalled approximately 106 10^9m^3 (3.8 Tcf). Most of this potential is located in the four supply areas identified by Westcoast for reserves additions to support its deliverability requirements over the forecast period.

The Board also developed estimates of remaining undiscovered potential for Westcoast's supply areas. In its analysis, the Board considered the exploitability of established and conceptual plays. The limitations of each play both areally and stratigraphically, combined with the discovery history, were examined. The plays were then assessed incorporating the type of pool (trap) configuration, expected frequency distribution of such pools, pool sizes, and statistical or subjective estimates of exploration risk (success ratios). The Board's review concluded that, with the exception of the Fort Nelson Mainline area, Westcoast's estimates of potential additions from remaining undiscovered potential are reasonable. Due to the Board's expectation of lower levels of drilling activity in the Fort Nelson Mainline Area, the rate of potential additions is expected to be lower than that forecast by Westcoast.

2.3 Productive Capacity

Westcoast provided a forecast of illustrative deliverability from the gas reserves and undiscovered potential available to its pipeline system for the period 1993 to 2002. The forecast volumes represented the deliverability required to meet Westcoast's forecast of peak-day requirements as of the first of January each year. The peak-day requirements were derived from Westcoast's market forecast, which is discussed in Chapter 3.

Westcoast provided deliverability forecasts for four categories of gas reserves: currently producing, proved non-producing, undiscovered potential from B.C., and Alberta reserves. Westcoast's projection of productive capacity from producing reserves is based on a pool-by-pool assessment of those reserves. Deliverability from the proved non-producing and undiscovered potential reserves categories was estimated assuming a 1:5750 rate-of-take. Deliverability was assumed to remain constant for five years and decline thereafter at a rate of five percent per year.

Westcoast's projections of productive capacity show a decline in the contribution of deliverability from producing reserves from 81 percent in 1993 to 32 percent by 2002. On the other hand, the share of productive capacity from the non-producing and potential gas categories increases from lows of six and five percent respectively in 1993 to highs of 18 and 34 percent respectively by 2002.

The Board's projections of productive capacity for the Fort Nelson Plant and McMahon Plant resource areas are similar to that of Westcoast. The Board's projection of productive capacity for the Fort Nelson Mainline area is lower than that provided by Westcoast due mainly to the Board's expectation of lower levels of drilling activity and lower average reserves per well than that assumed by Westcoast in this supply area. The Board is of the view that the Pine River area has been understated for both deliverability potential and future reserves additions, and could supply sufficient productive capacity to augment deliverability from other supply areas.

In addition, Westcoast relied upon Alberta gas volumes to support its projected peak-day demand. Westcoast forecasts doubling of the contribution of overall productive capacity of Alberta-sourced gas reserves available to the Westcoast system from 8 percent in 1993 to 16 percent by 2002 to help offset the forecast decline in B.C. production. Westcoast assumed that Alberta-sourced gas would be available to its system to the forecast level on the basis of the historical availability of such supply. The Board recognizes that Alberta-sourced gas has been and is likely to continue to be available to the Westcoast system. However, given the alternative markets available to Alberta production through pipeline expansions, Alberta gas volumes may not be available to Westcoast to the extent anticipated. Notwithstanding this concern, the Board notes that Westcoast's deliverability forecast was developed in consideration of an ever increasing market demand. In order for Westcoast to serve that increasing demand, a number of facilities expansions would be required to increase system capacity. Focusing on the applied-for facilities, Westcoast stated that there was sufficient deliverabilities to support its proposed expansion over the forecast period of 465 $10^3m^3/d$ (87 MMcfd) without necessarily drawing upon Alberta reserves.

Views of Interested Parties

IPAC recommended that the methodology used by Westcoast to forecast deliverability needs to be revised. IPAC suggested that Westcoast generate estimates of sustainable maximum deliverability for each supply area rather than match estimates of deliverability to a predetermined market forecast. IPAC indicated that projections of deliverability from each supply area would give more representative estimates than what the present methodology provides.

Views of the Board

The Board is satisfied that Westcoast's estimate of reserves and productive capacity is adequate to ensure sufficient utilization of the Westcoast system, including the proposed facilities.

With respect to the methodology employed by Westcoast to project productive capacity, the Board sees merit in IPAC's recommendation. Westcoast's current methodology involves tracking productive capacity projections to a predetermined level of demand. The Board prefers an approach to deliverability forecasting, which accounts for sustainable maximum deliverability from each supply area, without regard to demand levels, which it believes would provide a more representative projection of productive capacity.

Requirements

3.1 Service Agreements and Project Specific Markets

In support of its application, Westcoast filed the following executed ten-year firm service agreements for Transmission Service - Southern ("T-South"):

Shipper	Contract Quantity ($10^3m^3/d$)	Contract Quantity (MMcfd)
Amoco Canada Petroleum Ltd. ("Amoco")	854.0	30.1
Grand Valley Gas Company ("Grand Valley")	166.5	5.9
Inverness Resources Inc. ("Inverness")	185.9	6.6
Penn West Petroleum Ltd. ("Penn West")	270.0	9.5
Shell Canada Limited ("Shell")	240.0	8.5
Vancouver Island Gas Joint Venture ("Joint Venture")	1 000.0	35.3
Total	2 716.4	95.9

The agreements are conditional upon Westcoast obtaining, before 15 July 1992, NEB approval for the construction and the operation of the subject Southern Mainline Looping facilities.

Westcoast indicated that although its queue for firm service on the Southern Mainline was comprised of service requests totalling 55 175 $10^3m^3/d$ (1 948 MMcfd), firm service agreements have been entered into for 11 264 $10^3m^3/d$ (398 MMcfd). Of these, the six requests entered into by the aforementioned shippers for 2 716 $10^3m^3/d$ (95.9 MMcfd), underpin the applied-for facilities. Westcoast submitted, therefore, that it has received executed, firm service agreements from shippers for a total contract demand which exceeds the applied-for expansion.

The proposed expansion will enable Westcoast to increase its Southern Mainline capacity from 45 864 $10^3m^3/d$ (1 619 MMcfd) to 48 329 $10^3m^3/d$ (1 706 MMcfd) including fuel, or by 2 465 $10^3m^3/d$ (87 MMcfd). Westcoast will be able to provide only partial service to Amoco, which occupied the sixth position in Westcoast's queue, since the resulting expansion of 2 465 $10^3m^3/d$ (87 MMcfd) will not allow Westcoast to fully satisfy the total incremental service requirement of 2 716 $10^3m^3/d$ (95.9 MMcfd).

In response to the Board's request to Westcoast for additional information, the aforementioned shippers provided limited details with respect to their markets and the status of their contractual arrangements and regulatory approvals.

Amoco advised Westcoast that it intends to assign its firm service capacity to BC Gas Inc. ("BC Gas") in return for capacity that BC Gas had originally assigned to Amoco. As such, Amoco submitted that the "... transportation requested by Amoco can be considered to be in support of BC Gas Inc. to serve their historical incremental market". No additional details were provided with respect to the markets proposed to be served by Amoco or BC Gas or with respect to the status of their upstream and downstream transportation arrangements and their Canadian and U.S. regulatory approvals.

Grand Valley simply advised Westcoast that it intends to market its gas in the U.S. as fuel for a cogeneration plant. Similarly, Inverness advised Westcoast that it intends to market its gas in the U.S. Pacific Northwest market and that, in this regard, it recently obtained a two-year blanket import authorization from the U.S. Department of Energy/Fossil Energy. Inverness added that it has upstream Westcoast Transportation Service - Northern and Treatment Service. PennWest did not respond to Westcoast's request for additional information.

Shell advised Westcoast that it has executed a "Short Term Gas Sales and Purchase Agreement" with Sierra Power Company ("Sierra") for the sale of up to 425 $10^3m^3/d$ (15 MMcfd) at Huntingdon, B.C. for the period ending November 1993. Negotiations with Sierra towards finalizing a long-term gas purchase agreement are continuing. Shell noted that it has sufficient upstream Transportation Service - Northern capacity on the Westcoast system and that its U.S. buyer holds sufficient U.S. downstream pipeline capacity. Shell currently holds NEB Order GO-94-91 to export gas to Salmon Resources Inc., for resale to Sierra during the period ending 31 December 1994. In addition, Shell holds B.C. and Alberta gas removal permits which expire on 31 October and 1 November 1993, respectively.

Inland Natural Gas Marketing Ltd advised Westcoast that the Joint Venture[1] will be contracting with gas suppliers for 1 000 $10^3m^3/d$ (35 MMcfd) at Westcoast's Station No. 2 and at Huntingdon, B.C., starting 1 November 1992. The Joint Venture submitted that its requested T-South service is essential "... to ensure a minimum quantity of firm gas supply to the mills and to ensure that certain contractual obligations between the Joint Venture, the Province of British Columbia, PCEC and the local distribution companies are satisfied".

The Joint Venture noted that the gas producers have responsibility for contracting for firm gathering, processing and transportation to Station No. 2. Transportation downstream of the BC Gas/Westcoast interconnect at Huntingdon B.C. will be provided by PCEC and, therefore, the Joint Venture has executed a ten-year transportation service agreement with PCEC.

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[1] The Joint Venture is made up of four pulp and paper companies (Fletcher Challenge Canada, MacMillan Bloedel, Western Pulp and Paper, and Howe Sound Pulp and Paper) which own and operate seven pulp and paper mills and which are currently being served by Pacific Coast Energy Corporation's ("PCEC") Vancouver Island pipeline.

3.2 Overall Market Requirements

Westcoast provided an initial forecast of deliveries to the domestic and export markets off Westcoast for the eleven-year period commencing 1 January 1992 and ending 31 December 2002[1] (refer to Table 3-1), which indicated that:

(a) domestic deliveries are forecast to increase from 6 431 10^6m^3 (227 Bcf) to 8 385 10^6m^3 (296 Bcf) per year;

(b) export deliveries are forecast to increase from 6 885 10^6m^3 (243 Bcf) to 10 197 10^6m^3 (360 Bcf) per year; and

(c) total domestic and export deliveries are forecast to increase from 13 316 10^6m^3 (470 Bcf) to 18 582 10^6m^3 (656 Bcf) per year.

Westcoast later amended its long-term macro forecast and noted that the amendments reflected, among other things:

- adjustments in the market forecasts prepared by Pacific Northern Gas Ltd. ("PNG"), and by BC Gas with respect to its BC Gas Interior and Coastal Divisions, including an adjustment to reflect BC Gas' intention to import 113 10^6m^3 (4 Bcf) per year of U.S.-sourced gas via the proposed Huntingdon International Pipeline Corporation and Sumas International Pipeline Inc. pipeline systems;

- PCEC's most-recent ten-year market forecast;

- the Pacific Northwest LDCs' updated forecasts which showed increased gas consumption in their franchise areas;

- Westcoast's updated forecast of gas deliveries to the electric utility sector in the Pacific Northwest and in Nevada which reflected a more conservative rate at which new gas-fired generating capacity will be brought on line; and

- reduced deliveries off the Westcoast system into California via either Kern River Gas Transmission Pipeline ("Kern River") or Northwest Pipeline Corporation ("Northwest").

[1] Westcoast's original forecast was amended by the supplemental written evidence of G.R. Staple dated 4 May 1992.

TABLE 3-1
Market Forecast
10^6m^3(Bcf)

Calendar Year	1991*		1992		1995		2002	
Domestic								
Zone 3 **	255	(9)	255	(9)	255	(9)	255	(9)
Pacific Northern Gas ***	963	(34)	935	(33)	935	(33)	1048	(37)
BC Gas Interior Division ****	1445	(51)	1445	(51)	1501	(53)	1813	(64)
BC Gas Coastal Division ****	3059	(108)	2889	(102)	3088	(109)	3796	(134)
Pacific Coast Energy Corporation	85	(3)	510	(18)	623	(22)	708	(25)
Electric Generation	198	(7)	397	(14)	538	(19)	765	(27)
Total Domestic	6005	(212)	6431	(227)	6940	(245)	8385	(296)
Export								
NOVA/Gordondale	595	(21)	737	(26)	1190	(42)	1190	(42)
Pacific Northwest								
Northwest Pipeline	5354	(189)	5099	(180)	5467	(193)	6260	(221)
Ferndale Pipeline	170	(6)	170	(6)	170	(6)	170	(6)
Electric Generation	397	(14)	397	(14)	1218	(43)	1331	(47)
Total Pacific Northwest	5921	(209)	5666	(200)	6855	(242)	7761	(274)
California/Offsystem	170	(6)	482	(17)	737	(26)	1246	(44)
Total Export	6686	(236)	6885	(243)	8782	(310)	10197	(360)
Total Domestic and Export	12691	(448)	13316	(470)	15722	(555)	18582	(656)

Source: Westcoast letter dated 4 May 1992, the supplemental written evidence of G.R. Staple.

Notes

* Actuals

** Includes gas deliveries to LDC's serving the Fort Nelson, Fort St. John, Dawson Creek and Tumbler Ridge areas, as well as, to industrial customers directly connected to the Westcoast system in northeastern B.C.

*** Serves north-central and northwest B.C. Over 90 percent of PNG's throughput is to industrial customers (e.g. mining, smelting, and pulp and paper).

**** The interior and coastal divisions of BC Gas serve central B.C., the Greater Vancouver and the Lower Fraser Valley areas, respectively. Annual market growth of 3 to 5 percent is forecast primarily on the strength of core market sector expansion.

Specifically, the revised forecast showed that domestic, export and total gas demand off the Westcoast system had been revised downward by the following volumes:

Year	Domestic		Export		Total		
	10^6m^3	Bcf	10^6m^3	Bcf	10^6m^3	Bcf	%Change
1992	283	10	397	14	680	24	4.9
1995	453	16	340	12	793	28	4.9
2002	397	14	0	0	397	14	2.1

Westcoast indicated that its revised forecast resulted in a peak-day demand reduction of 850 $10^3m^3/d$ (30 MMcfd) on its Southern Mainline system.

In the absence of detailed project-specific market, contractual and regulatory status information, Westcoast indicated that it had assessed the need for the Southern Mainline capacity expansion by conducting macro reviews of the gas markets to be served off its system and by assessing the gas deliverability available at Compressor Station No. 2. Westcoast submitted that it was the lesser of these two which established the targeted capacity expansion. Westcoast added that, as a third verification, it circulated, for execution, ten-year service agreements to all the shippers in the Zone 4 queue, which resulted in 11 264 $10^3m^3/d$ (398 MMcfd) of capacity being requested. Westcoast concluded, however, that an expansion on the basis of the 11 264 $10^3m^3/d$ (398 MMcfd) of firm service requests was not warranted based on market and deliverability considerations which form the cornerstone of Westcoast's macro-approach.

Westcoast believes that the macro-approach to assessing the need for facilities is appropriate since it provides a reasonable basis for determining if expansion of facilities can be supported both by upstream deliverability and by downstream market demand. Westcoast submitted that the macro-approach is made necessary by the fact that the majority of the Southern Mainline capacity is contracted for under one-year, renewable service agreements and there is uncertainty regarding how much of the one-year capacity will be renewed. Westcoast has concluded therefore, that planning system expansions on the basis of long-term contracts executed by expansion shippers is impractical.

Westcoast submitted that its overall domestic gas market forecast took in consideration, the following:

(a) historical gas market data;

(b) its review of available domestic demand forecasts; and

(c) the annual forecasts prepared by, and reviewed with, BC Gas, PNG and PCEC.

Westcoast noted that the PCEC pipeline commenced deliveries to new core and industrial market customers on Vancouver Island and the Sunshine Coast in the Fall of 1991. Westcoast's Vancouver Island forecast assumes early conversion of large industrial loads (i.e. pulp and paper mills) to gas from heavy fuel oil and core market penetration, as the LDC, Centra Gas Inc. ("Centra") expands its system to provide service to residential, commercial and small industrial customers. Some of these customers are currently served by propane-air distribution systems in Victoria, Squamish and Nanaimo.

Westcoast's demand forecast for the Burrard Thermal Station is based upon discussions with the B.C. Power Exchange Corporation. Demand is forecast to be 390 10^6m^3 (13.7 Bcf) per year. In addition to the Burrard facility, Westcoast identified two new cogeneration facilities which were planned to come into service over the forecast period. The first facility, to be constructed adjacent to Westcoast's McMahon Gas Processing Plant, is to be in service by 1994. The second, to be located at Westcoast's Fort Nelson Plant, is to be in service by 1996. Westcoast noted that there is potential for additional gas-fired cogeneration development but that potential had not been reflected in its long-term forecast.

Westcoast submitted that its overall export market forecast was based upon the following:

(a) a review of Northwest's actual and forecast deliveries into the Pacific Northwest;

(b) an analysis of general trends in Westcoast deliveries at the Huntingdon, B.C. export point;

(c) an analysis of the "Least Cost Plans" of the U.S. LDCs, as submitted to their respective state regulatory commissions;

(d) ongoing discussions with Northwest and the U.S. LDCs connected to the Northwest system and major electric power generators; and

(e) ongoing discussions with the shippers who have committed to pipeline capacity on Northwest and on Kern River to serve southern California.

Westcoast indicated that approximately 50 percent of the gas flowing on its system is delivered to downstream pipeline systems for use outside B.C. Westcoast noted that, while gas entering Alberta through its Gordondale line has traditionally flowed to the northern California market, other export markets (i.e., the midwestern and eastern U.S.) and eastern Canadian domestic markets are also expected to be served in the near future. In addition, Westcoast noted the recent establishment of an additional export point near Huntingdon, B.C. associated with the construction of the Ferndale pipeline facilities connecting the Westcoast system to two large industrial gas consumers in northwest Washington state.

Westcoast is forecasting considerable market growth in the Pacific Northwest and California export markets.

In the Pacific Northwest (i.e. the states of Washington, Oregon, Idaho and northern Nevada), core industrial and electrical generation market sectors are forecast to grow from 5 666 10^6m^3 (200 Bcf) in 1992 to 7 761 10^6m^3 (274 Bcf) in 2002. Westcoast noted that the electrical generation market sector has become more important as a result of growing electrical demand driven by population growth and increased economic activity. Westcoast forecasts that gas

will be the fuel of choice for future fossil fuel-fired generating capacity by virtue of its anticipated competitive price advantage over fuel oil.

Westcoast believes that as electrical energy supplies in the Pacific Northwest become tight, electrical utilities and large industries (e.g. pulp and paper, petrochemical and forest products) will increasingly turn to gas-fired cogeneration facilities to satisfy their electrical needs.

With respect to California, Westcoast indicated that completion of the Kern River pipeline system from southwest Wyoming to Kern County, California will provide a new route for B.C.-sourced gas into that market. Westcoast noted that several shippers have in fact already contracted for firm service on the Northwest and Kern River systems commencing in early 1993. Westcoast noted that additional volumes of gas from other sources are also expected to flow into the California market in 1993 via expansions of the El Paso Natural Gas Company, Northwest, and Pacific Gas Transmission systems.

Westcoast indicated that it continually monitors its performance and annually prepares updated forecasts based upon the most current data and upon its ongoing dialogue with its domestic and export shippers, Northwest, and the U.S. LDCs.

Westcoast noted that, despite having firm, long-term shipper commitments for the expansion capacity, both Mobil and IPAC expressed concern that the new facilities may result in the under-utilization of the existing Southern Mainline, notwithstanding that those facilities are also fully contracted. Westcoast acknowledged that the Board must ultimately determine whether there is a reasonable expectation that the total mainline facilities, after the expansion, will be required in the long-term, and not simply, whether the incremental facilities will be required. Westcoast noted that no other party submitted market evidence.

Westcoast argued that the executed, long-term firm service agreements, coupled with its long-term market forecast, should enable the Board to conclude that there are viable, long-term markets for the gas proposed to be transported via the expanded Southern Mainline.

In reply to IPAC's recommendation that Westcoast adopt a market assessment methodology similar to that imposed upon TransCanada PipeLines Limited ("TransCanada") by the Board (refer to "Views of Interested Parties" in this Chapter), Westcoast argued that it prepared its forecast using many of the principles which underpin the TransCanada methodologies. Specifically, Westcoast submitted that in preparing its long-term domestic and export forecast it dialogued with its shippers, including those proposing to market gas in California, relied upon the market forecasts prepared by the B.C. and Pacific Northwest LDCs, and applied its own judgement based upon its 35 years of data and extensive marketing experience. With respect to IPAC's observation that Westcoast had failed to communicate with the industrial sector and end-use customers, Westcoast noted that while that is something that the LDCs do, Westcoast did communicate with the various cogeneration projects sponsors. Westcoast believed that its approach continues to be appropriate and that it did not see a need for it to conduct its own "bottom up" market forecast.

With respect to Mobil's evidence, Westcoast acknowledged that there have always been uncertainties in long-term forecasting and that being the case, Mobil's evidence does not reveal anything new. With respect to the Friedenberg study, Westcoast took exception to the study's use of the spot price and the basis upon which the study concluded that the cost of finding and producing gas in B.C. is much higher than that in Alberta.

Views of Interested Parties

IPAC argued that Westcoast's market forecast, in some instances, suffers from insufficient communication with the market place. Specifically, IPAC had concern regarding the durability of Westcoast's base case in light of the proliferation of short-term transportation contracts on the Westcoast system and the current U.S. regulatory uncertainties, both of which, it argued, could affect long-term forecasting. In addition, IPAC expressed concern regarding the lack of available information on how Westcoast converted its forecast annual demand figures into peak-day demand figures for use in sizing its facilities design.

IPAC recommended that Westcoast should be required to develop a market forecast assessment procedure similar to that imposed by the Board upon TransCanada in the GH-2-87 proceedings[1]. IPAC added that any market survey should be conducted on both a macro and a micro basis, and should include consideration of the peak-day requirement, relative economics, and other sources of gas supply available to the markets served by the Westcoast system.

IPAC submitted that, based upon the expansion shippers' willingness to execute ten-year firm service agreements and given that most of the expansion is intended to serve a domestic market which has no reasonable alternative means of accessing its gas supply, it was satisfied that the market exists for the six expansion shippers underpinning the expansion. IPAC believed that Westcoast will retain its existing market and will maintain a reasonable load factor on its existing Southern Mainline facilities.

IPAC supported approval of the applied-for facilities, but recommended, among other things, the following:

(a) That the issues of queuing and the contract renewal notice period continue to be dealt with by the Westcoast Toll and Tariff Task Force and that these be brought forward for Board consideration prior to Westcoast's next facilities application for Southern Mainline expansion.

(b) That Westcoast adopt a system of market assessment prior to its next facilities application for Southern Mainline expansion which would require more in-depth consultation with its shippers, producers and the market place.

The Northwest Industrial Gas Users Association ("NWIGU") submitted that the Board should find Westcoast's overall domestic and export market forecast to be reasonable and supportive of the applied-for facilities. It noted, however, that it believes that Westcoast's long-term assessment of the Pacific Northwest core, industrial, and gas-fired electric generation market sectors may be too conservative. For example, it noted that Westcoast has factored into its long-term forecast only those electric generation projects which are either under construction or which are close to receiving their requisite regulatory approvals. NWIGU argued that its member companies purchase substantial quantities of Canadian gas off the Westcoast/Northwest system and, as such, they are directly affected by the reliability and cost of Westcoast's service. NWIGU urged the Board to approve the application.

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1 Refer to the Board's Reasons for Decision, TransCanada PipeLines Limited, "Applications for Facilities and Approval of Toll Methodology and Related Tariff Matters", July 1988, Chapter 3, Requirements, Views of the Board, Page 11.

CanWest Gas Supply Inc. ("CanWest") indicated that it continues to support the Westcoast system expansion provided that Westcoast is able to satisfy the Board with respect to its criteria for expansion (e.g. existence of incremental, long-term markets; gas supply data; and long-term transportation arrangements). CanWest urged the Board not to establish a precedent requiring Westcoast to make public certain contractual terms of its T-South service shippers since it believes that such information is highly confidential.

Mobil indicated that the central issue in the proceeding was whether there are secure, incremental, long-term markets for the additional gas to be transported via the applied-for facilities expansion. Mobil expressed concern that there is greater uncertainty in today's dynamic gas markets and that there are major structural changes occurring in the industry which impact upon supply, transportation, and the marketing of gas (e.g. the shift from aggregator/LDC supply purchase arrangements to direct purchases by LDCs and end-users and the major policy initiatives with respect to the unbundling of existing pipeline services).

In addition, Mobil identified, among others, the following problem areas for Canadian gas producers and for Westcoast, in preparing a long-term domestic and export market forecast:

- the emerging overcapacity issue associated with transportation systems into California;
- the potential impacts of FERC Order 636;
- the impact on existing markets of growing high load factor coal seam gas supplies; and
- the potential for increased use of storage.

Specifically, Mobil noted that it is concerned that Westcoast's long-term forecast is based on static market conditions and ignores the potential for future competition from known alternative gas supply sources. Mobil argued that the existence of executed, ten-year transportation service agreements is not evidence of a secure incremental, long-term market, since those agreements could be used to serve existing demand already served under one-year renewable service agreements.

Mobil's expert witness, Mr. Friedenberg of Brent Friedenberg Associates Ltd., who analyzed the dynamics of the market and identified the uncertainties with respect to it, concluded that:

(a) The difference in various gas demand forecasts adds to the uncertainty regarding B.C. gas exports and that if future gas demands in B.C., the Pacific Northwest, and in California turn out to be lower than forecast by Westcoast, the demand for B.C.-sourced gas could be lower as well.

(b) The growth in pipeline capacity relative to gas demand will lead to more competition for gas sales and may result in lower market prices and lower netbacks for B.C. gas producers, thus creating uncertainty with respect to future growth in sales to those markets.

(c) The current low netback prices associated with export sales into California do not cover the cost of gas production and that those netbacks could go even lower if the pipeline expansions into California all proceed and thereby, cause further softening in market prices.

(d) To properly assess the need for Westcoast's proposed expansion, consideration must be given to relative trends in netbacks and in producer costs, something which Westcoast has failed to do.

Mobil submitted that Westcoast is out of touch with its market. Mobil submitted that Westcoast had failed to conduct an independent assessment of those markets and had failed to look at the dynamics of the market share within each of those markets which have traditionally been served by B.C.-sourced gas (i.e. that Westcoast had failed to ask the questions of whether B.C.-sourced gas is more or less competitive in those markets than in the past and whether there are alternative sources of gas supply available to those markets). Mobil argued that these are fundamental questions which Westcoast should address when determining the need for a facilities expansion.

Mobil believes that there is currently too much uncertainty associated with long-term forecasting with the result that the long-term demand justifying the expansion may not be incremental demand, thus leaving Mobil and the other shippers to pay for the expansion over its remaining economic life.

Northwest noted that the FERC recently issued its "Preliminary Determination" in favour of Northwest's expansion project and which will permit Northwest to proceed with its 7 139 $10^3m^3/d$ (252 MMcfd) facilities expansion for service commencing 1 April 1993. Northwest noted that with the expansion, firm transportation receipts from Westcoast at Huntingdon, B.C. will increase from 22 152 $10^3m^3/d$ (782 MMcfd) to 29 291 $10^3m^3/d$ (1 034 MMcfd). Northwest noted that the additional capacity is required to serve growing Pacific Northwest markets off its system. Northwest concluded that Westcoast's current mainline looping application, as well as the looping not yet applied for, is required to accommodate the additional capacity which Northwest has committed to reserve at Huntingdon, B.C. in the aforementioned expansion project.

Views of the Board

The Board finds Westcoast's long-term overall forecast of domestic and export markets served off the Westcoast system to be reasonable for the purpose of assessing the need for the applied-for facilities. The Board is satisfied that Westcoast's long-term market forecast, coupled with the executed long-term transportation service agreements, demonstrate the existence of viable, long-term markets and provide reasonable assurance that the applied-for facilities will be used and useful over the long term. The Board also noted the number of shippers in Westcoast's Southern Mainline queue who have executed firm service agreements but on whose behalf Westcoast has not yet filed for Board approval to expand its facilities.

With respect to the specific projects underpinning the expansion, the Board continues to be concerned regarding the lack of specific information made available by Westcoast at the time it filed its facilities application. While the Board is both sensitive to the shippers' need to maintain confidentiality and to Westcoast's responsibility to operate in accordance with both Article 18, Section 18.01 of the General Terms and Conditions – Service and its Queuing Procedures and Access Criteria, the Board believes that there is a certain minimum level of project–specific information that should be made available at the time a facilities application is filed. The Board believes that such information would be of assistance to all parties in assessing the purpose and the need for the applied-for facilities expansion. Likewise, the

Board believes that such information might assist in reducing some of the uncertainty in determining whether the new projects reflect incremental or displacement markets.

The Board is satisfied with Westcoast's current forecasting methodology and concurs with Westcoast that there are already many reliable sources of information and other forecasts upon which to rely. The Board has not been persuaded that Westcoast is out of touch with the marketplace. Therefore, the Board will not require Westcoast to adopt the forecast assessment procedure proposed by IPAC.

The Board encourages Westcoast to continually monitor and to assess the markets served off its system and to prepare updated forecasts as required. Where there is likely to be a significant passage of time between the filing of the facilities application and the Board's consideration of that application, the Board expects Westcoast to provide timely advice of any changes to the forecast and of any possible impact upon the facilities applied for.

To assist in the assessment of facilities applications, the Board believes it would be helpful if Westcoast were to provide a more detailed explanation of how Westcoast converts the annual requirement figures in its long-term forecast to peak day requirements for facility design purposes. Therefore, the Board expects Westcoast to provide, as part of future facilities applications, a detailed explanation of the methodology employed, and the numbers used, in arriving at the peak day obligation upon which the need for the facilities expansion is based.

The Board has noted the concern expressed by interested parties regarding the proliferation of renewable short-term transportation service agreements and the difficulties such agreements create in forecasting system throughput and system design. The Board is aware that this matter is currently being dealt with by the Toll and Tariff Task Force for possible future disposition by the Board.

4.1 Specific Facilities

Westcoast has applied to loop the existing 762 mm (30 inch) O.D. Southern Mainline at four locations. The proposed facilities would consist of four sections of 914 mm (36 inch) loop totalling 32.69 km (20.32 miles), and would increase the capacity of the Southern Mainline from 45 864 $10^3m^3/d$ (1 619 MMcfd) to 48 329 $10^3m^3/d$ (1 706 MMcfd), including fuel. The cost of the facilities is estimated to be approximately $39,477,000. The Southern Mainline transports residue gas for delivery to domestic markets and to the export market at Huntingdon.

Westcoast estimated the approximate incremental capacity resulting from the addition of each of the four loop sections to be as follows:

Loop Section	Incremental Capacity $10^3m^3/d$ (MMcfd)		Milepost Locations
Kersley	1 360	(48)	311.37 - 317.66
100 Mile House	510	(18)	413.42 - 419.54
Nicola	453	(16)	521.26 - 527.45
Kingsvale	113	(4)	537.82 - 539.54

4.2 Existing Capacity

In its application Westcoast indicated that it had a peak day capacity of 45 581 $10^3m^3/d$ (1 609 MMcfd) on the Southern Mainline. However, in revisions submitted prior to the hearing, Westcoast indicated that its peak day capacity had risen by 283 $10^3m^3/d$ (10 MMcfd) as a result of increased deliveries at the upstream end of the Southern Mainline to PNG and BC Gas Inland. Westcoast testified that its peak day capacity (the total capacity contracted under firm service agreements) is five percent less than the theoretical maximum capability of the system. Under normal operating conditions, the maximum capacity cannot be sustained over an extended period of time. Therefore, only 95% of the system capacity is available on the Southern Mainline for firm service contracts.

Westcoast testified that looping, as opposed to adding compression, is currently the most cost effective way to increase capacity on the Southern Mainline. Westcoast indicated that a $33 million investment in additional compression at the optimum location would provide approximately 850 $10^3M^3/d$ (30 MMcfd) in additional capacity. By contrast, the applied-for facilities at a cost of approximately $40 million would add an additional 2 465 $10^3m^3/d$ (87 MMcfd) of capacity.

In final argument, IPAC expressed concern that there may be more capacity currently available on the Southern Mainline than indicated by Westcoast. IPAC requested the Board to order Westcoast to have an independent capacity study performed to assess the capability of the entire Westcoast system, and in particular the Southern Mainline.

Views of the Board

The Board is satisfied that Westcoast's estimate of existing capacity on the Southern Mainline is reasonable. The Board is of the view that a five percent margin between peak day capacity and maximum system capability is also reasonable. For these reasons, the Board does not find it necessary to order Westcoast to have a capacity study performed.

4.3 Facilities Planning

In its application, Westcoast stated that it determined the need for and the size of the proposed expansion after giving consideration to forecast market demand, forecast excess deliverability at Station 2 expected in the 1992 contract year, and the amount of expansion capacity subscribed for under executed long-term firm service agreements. During the hearing, Westcoast stated that it designed its facilities to the lesser of these three criteria.

Westcoast indicated that the use of a macro-approach in planning common-use facilities such as the mainline transmission system is necessary as the majority of the capacity on the Southern Mainline is under one-year renewable agreements. As such, planning system expansions on the basis of long-term contracts is impractical. Westcoast submitted that the macro-approach provides a reasonable basis for determining if expansion of facilities can be supported both by upstream deliverability and downstream market demand.

Westcoast's market forecast, which is addressed in Chapter 3 of these Reasons for Decision, suggests consistent growth over the forecast period. In 1993 the peak day volumes in Zone 4 were originally forecast to increase by 3003 $10^3m^3/d$ (106 MMcfd) over the 1992 volumes. On the basis of initial peak day requirement forecasts indicating a need for more capacity, Westcoast considered its other two expansion criteria.

A discussion of the deliverability forecasts is contained in Chapter 2. Westcoast estimated that gas supply available to its system in 1993 exceeded its current capacity by 3 201 $10^3m^3/d$ (113 MMcfd). Westcoast applied to expand its capacity by less than the excess deliverability indicated as, in its view, the market forecast system planning criterion indicated that a smaller system expansion would be prudent.

To assist in determining the appropriate size for its Southern Mainline expansion, Westcoast circulated 10-year firm service agreements to shippers in its Southern Mainline queue. Shippers subscribed for 11 264 $10^3m^3/d$ (398 MMcfd) of firm service capacity. This volume is far in excess of the deliverability and peak-day market forecast and, as such, an expansion of this magnitude was not viewed by Westcoast as warranted.

Having considered these criteria, Westcoast determined that it was justifiable to construct four loops to increase the Southern Mainline capacity by 2 465 $10^3m^3/d$ (87 MMcfd). The loop selection process is discussed in section 4.4.

Although none of the parties took issue with the three criteria that Westcoast uses in planning system expansions, some parties questioned the manner in which those criteria had been employed in planning the applied-for facilities. As noted in Chapters 2 and 3 of these Reasons, IPAC suggested that Westcoast should perform a bottom-up deliverability forecast and a more comprehensive and rigorous review of the markets served off its system.

In argument, Mobil touched on the premise that facilities should be sized to ensure that the system is big enough to move all the gas that can reasonably find a market, but not bigger than it needs to be. In other words, the pipeline should be sized to provide the necessary service at the least cost. In Westcoast's case, Mobil suggested this premise should be applied using the most conservative criteria since 80 percent of Westcoast's transportation contracts are one-year renewables. Mobil shared IPAC's concern regarding Westcoast's approach to determining deliverability, and suggested that the market forecasts were done without considering the dynamics of the market and whether B.C. gas would be more or less competitive over time.

NWIGU saw a need for Westcoast's proposed expansion and stated that in its view Westcoast's forecasts for gas demand in the Pacific Northwest may be too low. CanWest similarly supported the expansion, as did Enserch and Enco.

Northwest noted that the FERC recently issued its "Preliminary Determination" in favour of Northwest's expansion project involving some 7 139 $10^3m^3/d$ (252 MMcfd) of facilities expansion for service commencing 1 April 1993. Northwest noted that with the Westcoast expansion, firm service receipts from Westcoast at Huntingdon, B.C. will increase to match the Northwest expansion and that the current Southern Mainline looping application, as well as looping not yet applied for, will be required to accommodate Northwest's service commitments.

Views of the Board

Given that a significant percentage of the existing capacity of the Southern Mainline is under one-year renewable contracts, the Board views as appropriate the approach taken by Westcoast to determine the need for and the size of expansion facilities. The analysis done by Westcoast is adequate to support an expansion of its system.

4.4 Loop Selection

Westcoast testified that it was limited in its options for capacity additions in planning its Southern Mainline expansion. As the looping of the Southern Mainline is almost complete, further expansion by looping involves the completion of particular sections, each of which is of a specific length. Each loop will contribute capacity to the system, however, the length, location and system parameters will affect the exact contribution. In selecting the four proposed loops, Westcoast explained that the additional capacity from the proposed facility expansion provided Amoco with 255 $10^3m^3/d$ (9 MMcfd) less than its requested firm service.

A fifth loop, however, would have resulted in an additional 1 275 $10^3m^3/d$ (45 MMcfd) of capacity which Westcoast felt was not justifiable in light of overall market demand.

Westcoast noted that its peak day requirements forecast had dropped by 850 $10^3m^3/d$ (30 MMcfd) since the initial forecast upon which the design was based. In addition, as noted in section 4.2, Westcoast's current peak day capacity estimate has risen by 283 $10^3m^3/d$ (10 MMcfd) since the time the application was filed. Westcoast explained that in spite these changes, it considers it prudent to proceed with all four loops for the following reasons:

(a) the peak-day forecast is very sensitive to the load factor. A one percent change in load factor would result in a 567 $10^3m^3/d$ (20 MMcfd) change in peak-day requirements;

(b) the additional capacity is fully contracted for the coming year, and all short-term contract shippers have exercised their six month renewals rights;

(c) the capacity is expected to be fully utilized in the long term, with the completion of the Northwest expansion in early 1993 and the continued growth in Westcoast's markets;

(d) Westcoast currently has a pressure maintenance problem at Huntingdon during periods when large swings in load occur on its system. The addition of the two proposed downstream loops would better allow Westcoast to meet contract pressure at Huntingdon during peak load conditions;

(e) cost savings with respect to contractor mobilization and economies of scale would be realized by doing all four loops at the same time;

(f) additional system security would be realized; and

(g) in the event that the facilities were underutilized this year, a savings of about $1 million in compressor fuel costs would result.

Mobil expressed concern regarding the construction of these facilities in light of the decreased demand forecasts submitted by Westcoast. It suggested that by waiting to construct the applied-for facilities, the expansion volumes covered by firm service agreements could still be transported on the existing system and that some of the uncertainties may be at least partially resolved by next year, allowing better selection of appropriate loop additions. If facilities are required sooner, Mobil submitted that they could be constructed at any time of year in 18 weeks.

Westcoast indicated that it viewed Mobil's suggestion of contracting to provide firm service for volumes in excess of its peak day capacity as imprudent. In the event of a cold winter such as in 1990-91 which saw the system operating at peak capacity for 36 days, service to some shippers would almost certainly be curtailed.

Views of the Board

The Board is reasonably confident that the applied-for facilities will be fully contracted over both the short and long terms given that all capacity on the Southern Mainline is fully contracted for the 1992-93 contract year and that the markets served off the Westcoast system will continue to grow. The Board takes additional comfort from the fact that in recent years Westcoast's level of short term contract renewals has been high. With respect to the export market, the Board notes that 95 percent of the take-away capacity on the Northwest Pipeline from Huntingdon is held under firm service contracts for terms of 15 years. It is further noted that the planned Northwest expansion is far in excess of the applied-for Westcoast expansion.

The Board finds Westcoast's rationale for proceeding with the applied-for facilities despite the reduction in its peak day requirements forecast to be reasonable. The Board notes that in addition to providing capacity which is fully contracted, a number of intangible benefits would accrue. Among these are a reduction in problems maintaining pressure at the downstream end of the system, enhanced security, and potential fuel savings.

4.5 Other Technical Considerations

The loops are designed to meet a maximum operating pressure of 6 454 kPa (936 psi) and will be pressure tested to a minimum of 8 067 kPa (1 170 psi). The Southern Mainline is already extensively looped with 914 mm (36 inch) O.D. pipe. The proposed looping would match the existing pipe in both diameter and designed maximum operating pressure.

Views of the Board

The Board is satisfied with the design parameters employed by Westcoast in the design of the applied-for facilities.

4.6 Financial Matters

Westcoast stated that it intends to finance the project, estimated to cost $40 million, with internally generated funds and with funds from external sources. The construction of the applied-for facilities would result in a Zone 4 average rate base increase of 15% for the 1992 to 2002 period and an increase in average annual Zone 4 tolls of 1.5% for the 1992 to 1997 period and .96% for the 1992 to 2002 period.

IPAC expressed concern that cost overruns that may be incurred on this project could eventually be approved for addition to rate base. During cross-examination by IPAC, Westcoast stated that approximately 90% of the engineering had been completed and firm price quotes had been received for most of the materials. Given this level of certainty IPAC argued that the inclusion of a 10% contingency item in the total cost was generous, and that Westcoast shareholders should be responsible for any costs over the applied-for amount. Westcoast objected to this on the basis it was a one-sided approach as Westcoast shareholders would not receive the benefit if the project was completed under budget.

Views of the Board

The Board considers Westcoast's financing plan as well as the Company's estimates of the impact of the Southern Mainline Looping project on Zone 4 rate base, cost of service and tolls to be reasonable. The Board accepts these estimates for the purposes of this application.

The Board acknowledges IPAC's concerns with the high level of the contingency item given the percentage of the engineering already completed and the high degree of certainty regarding the cost estimate. The Board will decide on the question of whether any cost overruns will be included in rate base in a future Part IV proceeding.

Land Use, Environmental and Socio-Economic Issues

5.1 Assessment Process

As part of its application, Westcoast submitted an Environmental and Socio-Economic Assessment of the Southern Mainline Loop pipeline project. The assessment included a description of the environmental setting, an assessment of the probable environmental effects, and recommendations to prevent or mitigate any adverse environmental effects resulting from the applied-for facilities. In general, the assessment provided information on climate, soils, geology, hydrology, vegetation, fisheries, wildlife, land uses, heritage resources and recreation. In addition, socio-economic information, consisting of a description of the nearby communities (population, economy, infrastructure and services), probable effects, and recommendations to avoid or mitigate any adverse effects, was provided.

The environmental and directly related social effects of the project were considered concurrently under two separate processes:

(i) a project review pursuant to the Board's mandate under Part III of the Act; and

(ii) an environmental screening of the application pursuant to the *Environmental Assessment Review Process Guidelines Order* ("EARP Guidelines Order"), to the extent that there was no duplication with the Board's mandate under Part III of the Act.

Each process was conducted pursuant to the Board's Directions on Procedure as set out in Hearing Order GH-3-92. As part of the procedure, the comments of interested parties were invited with respect to each of these processes. The only party who submitted comments related to the environmental and directly related social effects of the project was the federal Department of Fisheries and Oceans ("DFO").

5.2 Early Public Notification

As part of its application process and consistent with the Board's Memorandum of Guidance Concerning Early Public Notification of Proposed Applications, Westcoast indicated that between June and October 1991 it had discussed its proposed application with a number of federal, provincial and municipal agencies as well as other affected parties. These parties included: the DFO; the Canadian Coast Guard; the B.C. Ministry of Environment, Lands and Parks ("MELP"); the B.C. Ministry of Forests ("MOF"); the B.C. Agricultural Lands Commission ("ALC"); the B.C. Archaeological Branch; and various communities and Regional Districts. These discussions and meetings allowed for both early public input and continued input as the project developed.

Furthermore, Westcoast contacted the Nicola Mameet Indian Band concerning the Nicola Loop and the Coldwater Band concerning the Kingsvale Loop. Westcoast advises that the two Indian Bands contacted did not oppose the proposal, but indicated an interest in economic issues such as compensation, employment, and business opportunities. Westcoast indicated that they would continue the liaison with the Bands throughout the planning and construction phases of the proposal.

Westcoast also contacted directly-affected landowners and other parties having an interest across the lands to be acquired for the proposal.

Landowners on the Kersley Loop were contacted personally by Westcoast on 8 April 1992 and two trappers were notified on 13 March 1992. There were no major concerns/comments from the landowners or the trappers.

Landowners on the 100 Mile House Loop were contacted personally by Westcoast between 5 March and 15 April, 1992 and three trappers were notified on 8 April 1992. There were no comments or concerns from the landowners or the trappers.

The single landowner on the Nicola Loop, the Nicola Mameet Indian Band, was contacted personally by Westcoast in August 1991. As noted above, Westcoast indicated that the Band representatives did not oppose the proposal, but indicated an interest in economic benefits such as compensation, employment, and business opportunities.

The single landowner on the Kingsvale Loop was contacted by Westcoast on 13 April 1992. The landowner did not express any concerns or comments.

Views of the Board

The Board is satisfied that Westcoast has notified and discussed the proposed application in an adequate and timely fashion with government agencies and the Indian bands. The Board notes that landowner contacts were initiated well after the filing of the application. In future, the Board expects Westcoast to contact landowners at an earlier stage in the planning process so that their comments/concerns, if any, are incorporated and addressed in its applications.

5.3 Land Requirements

Loop 1 (Kersley) - Mp 311.37 to Mp 317.66

The proposed Kersley Loop would be constructed within the existing 30.5m (100 foot) right-of-way which runs predominantly within private lands with the exception of three road crossings and one parcel of Crown Provincial Land. Westcoast holds multiple line rights for the entire length of this loop which enables Westcoast to construct, operate and maintain one or more pipelines without acquiring more right-of-way.

Loop 2 (100 Mile House) - Mp 413.42 to Mp 419.54

The proposed 100 Mile House Loop would be constructed, for the most part, within the existing 30.5 m (100 foot) right-of-way which runs predominantly through Crown Provincial lands together with some private lands. Westcoast holds multiple line rights for the entire length of the loop.

Additional right-of-way would be required for a short diversion from the existing right-of-way. This diversion would be located within private lands owned by BCR Properties Ltd. A new 18 m (60 foot) right-of-way for approximately 304.8 m (1,000 feet) would be required. The diversion results from the location of a buried fibre optics communication cable owned by B.C. Rail which parallels the east side of the pipeline right-of-way. Due to this and associated terrain constraints, the proposed loop has to be located to the west side and outside of Westcoast's existing right-of-way to avoid possible disruption to the communications cable. BCR Properties Ltd. has agreed to convey the extra right-of-way to Westcoast.

Loop 3 (Nicola) - Mp 521.26 to Mp 527.45

The proposed Nicola Loop, for the most part, would be constructed within the existing 18m (60 foot) right-of-way, which runs entirely within the Lower Nicola Indian Reserve. Westcoast has only single line rights through this loop section, and must negotiate for rights for a second line. During the hearing, Westcoast testified that it had obtained rights for the second line from the Nicola Mameet Band.

Loop 4 (Kingsvale) - Mp 537.82 to Mp 539.54

The proposed Kingsvale Loop would be constructed within Westcoast's existing 30.5m (100 foot) wide right-of-way which runs predominantly through Crown Provincial lands together with some private lands. Westcoast holds multiple line rights throughout this loop section.

Views of the Board

In respect of the above-noted loops, the Board is satisfied with Westcoast's proposed use of existing easements with associated temporary work space, as well as the short diversion along the 100 Mile House Loop. The Board also considers that the general routes proposed by Westcoast for those loops are acceptable.

5.4 Environmental Effects

Westcoast identified a number of environmental and directly related social effects which could result from the pipeline looping proposal. In addition, Westcoast outlined measures to avoid, prevent and mitigate the probable effects and restore the disturbed areas. The following is a summary of the relevant issues and the proposed mitigative measures.

a) Agricultural Soils

Agricultural lands are present along each of the loops. Westcoast indicated that topsoil would be stripped from the right-of-way, stored and replaced in the correct sequence following pipe installation. Westcoast also indicated that topsoil would be removed and stockpiled prior to any right-of-way grading. Westcoast would remove rocks scattered over the right-of-way or adjacent property as a result of blasting. In addition, Westcoast indicated that any conditions outlined in the Agricultural Lands Commission approvals would be implemented.

Westcoast indicated that solonetzic dark brown chernozems and saline gleysols would be present along the Nicola Loop. As there may be some potential for saline soils, Westcoast undertook to provide additional information relating to the soils' saline characteristics, as well as any special handling or restoration techniques to mitigate any effects. Moreover, Westcoast indicated that it would undertake to conduct a soil survey along all of the loops and provide a report to the Board prior to the commencement of construction.

b) Hydrology and Fisheries

The proposed pipeline looping crosses sixteen watercourses which could be adversely affected by construction-related activities. Westcoast undertook to implement a number of standard mitigative measures to be followed for all watercourse crossings in an effort to limit the potential adverse environmental effects. Moreover Westcoast indicated that consultation with DFO and MELP on the selection of the actual timing of construction through the watercourses, the sediment control procedures and the crossing techniques would occur as part of the necessary approvals. Westcoast indicated that it would attempt to abide by the instream construction windows established by MELP and DFO, but if construction had to occur outside these windows, it would discuss these situations with DFO and MELP, and explore alternative mitigative techniques to provide environmental protection. Westcoast also undertook to advise the Board, if construction outside the established windows was to be undertaken in any watercourse. Moreover, Westcoast undertook to provide the Board, prior to the commencement of construction, with copies of all approvals received relating to the crossing of watercourses.

Westcoast indicated that if construction of the crossing of the Nicola River, using standard techniques, could not be completed between 15 July and 1 August 1992 as set out in the DFO letter of 22 May 1992 (the summary of the instream construction windows found in this letter is included as Appendix I to these Reasons), it would consider directional drilling as an alternative. Westcoast indicated that it was currently conducting a soil/geotechnical evaluation on the river, and would file the results with the Board. Westcoast indicated that if soil studies supported directional drilling, it would be the preferred method. DFO indicated, in its 22 May 1992 letter, that the timing of the Nicola River window could be extended if directional drilling were to be undertaken.

Westcoast indicated that it had received approval from the Canadian Coast Guard for the Nicola River crossing and would forward a copy of the approval to the Board.

Westcoast submitted that short sections of the loops would encounter areas having a high water table, wetlands and ponds. Westcoast indicated that it would avoid disturbance to these areas along the rights-of-way. However, if these areas could not be avoided during construction, Westcoast would divert the excess water using standard construction measures to

an area off the right-of-way with natural vegetation. Local drainage systems could be disrupted as a result of blocking and hence re-directing surface and subsurface flows from construction activities. Westcoast indicated that impermeable ditch plugs would be installed prior to backfilling to ensure that natural drainage patterns through the wet areas are maintained.

c) Wildlife

Westcoast indicated that the pipeline looping could result in several environmental effects to wildlife and wildlife users. Included in those effects were sensory disturbance, blockage of wildlife movement, habitat alteration, increased access with a potential increase in hunting activities, animal mortalities resulting from vehicle collisions, and the disruption of local hunting and trapping patterns.

The proposed construction would avoid the most critical reproductive time period but may have some effect on the mating period. Westcoast indicated that it would complete clean-up as soon as possible after construction to eliminate post-construction effects. Moreover, Westcoast indicated that if construction extended into autumn, additional studies would be completed to avoid negative effects on the local wildlife cycles. In addition, Westcoast would notify hunters, prior to the start of the hunting season(s), by placing notices in local newspapers and posting signs at all rights-of-way access points.

d) Vegetation

Westcoast submitted that the clearing of the rights-of-way would effectively change approximately 17 hectares ("ha") of interior forest to a persistent grass\legume community. No vegetative communities warranting special attention are known to occur along the loops. Westcoast proposed to salvage merchantable coniferous trees and implement strict operating procedures to limit timber spoilage, in accordance with MOF approvals. Westcoast submitted that it would dispose of all slash remaining after timber salvage by burning. Westcoast undertook to obtain, and file with the Board prior to the commencement of construction, all MOF approvals.

To minimize the spread of weeds, Westcoast would ensure that all construction equipment is pressure-washed prior to moving onto each loop.

e) Spills and Hazardous Materials

Environmental effects may result if hazardous materials such as fuels and lubricating oils are improperly disposed of or inadvertently spilled. These events could contaminate soils, surface water and groundwater. Westcoast submitted contingency measures which set out procedures for the safe handling and disposal of hazardous materials as well as procedures in the event of a spill.

f) Heritage Resources

Westcoast indicated that archaeological and heritage resources in the area of the loops would be surveyed in early summer 1992, and the results of the survey would be forwarded to the Board. Westcoast indicated that it would provide a copy of the B.C. Archaeological Branch approval to the Board prior to the commencement of construction.

Members of the Nicola Mameet Indian Band have indicated that they would investigate the potential for sacred grounds along the Nicola Loop and advise Westcoast accordingly. In any case should any artifacts of apparent significance be uncovered during construction, Westcoast indicated that work would be suspended in the vicinity of the find until a qualified archaeologist could assess the area and recommend mitigative measures.

g) Land Uses

The two predominant land uses along the loops are agriculture and forestry. Westcoast indicated that the clearing of the forest areas, as a result of the minor widening of the present rights-of-way, may create some additional lands for agricultural use. Apart from this, Westcoast indicated that land uses should not change significantly.

Westcoast did not identify any special land uses along the loops, although the commencement of the 100 Mile House Loop is located immediately outside the Village of 100 Mile House. In addition, the Nicola Loop is located entirely within the Lower Nicola Indian Reserve and two other Indian reserves are located in the vicinity of the Kingsvale Loop.

Westcoast undertook to provide to the Board, prior to the commencement of construction, copies of all approvals from the B.C. Agricultural Lands Commission.

h) Recreation

The lands to be crossed by the loops are classed, under the Canada Land Inventory classification, as having moderate to low capability for outdoor recreation. Westcoast indicated that the rights-of-way support a variety of outdoor recreational activities, such as hunting, hiking, horseback riding, snowshoeing, snowmobiling, cross-country skiing, and all terrain vehicle use. The use of the rights-of-way may be limited due to the extent of private land ownership. Westcoast concluded that the construction of the loops should not affect recreational capability or use patterns.

No commercial recreational operations are located along the loops.

Views of the Board

The Board is satisfied with the environmental information provided by Westcoast with regard to the potential effects which may result from the construction and operation of the proposed facilities and is satisfied with Westcoast's proposed mitigation measures and commitment to obtain necessary approvals.

The Board is of the view that with Westcoast's proposed environmental protection measures, as well as its compliance with agency approvals, the project will create environmental effects of only a local and temporary nature. Should Westcoast's application be approved, the Board would condition the Order so as to ensure adherence with these measures and approvals.

With respect to the protection of fish and fish habitat, the Board is satisfied with Westcoast's undertaking to adhere to DFO's instream construction windows, and its consultative process with DFO to obtain the necessary approvals.

5.5 Environmental Reporting

Westcoast identified a number of reporting mechanisms that would be undertaken to ensure that any environmental effects were satisfactorily mitigated. These reporting mechanisms, and Westcoast's proposed actions, are as follows:

(a) Environmental Issues List

Although an Environmental Issues List ("EIL") was not provided in the application, Westcoast undertook to provide such a list to the Board prior to the commencement of construction.

(b) Environmental Inspection

Westcoast indicated that a supervisory staff consisting of a Chief Inspector and several activity inspectors would be maintained on-site throughout the construction period. Westcoast further indicated that it would have an on-site environmental inspector who would be responsible for assuring contractor compliance with approved environmental design and procedures, and for addressing any site-specific concerns that could arise during construction. Westcoast indicated that its environmental inspector would also maintain liaison with governmental regulatory agencies on environmental matters.

(c) Post-Construction Monitoring

Westcoast submitted that personnel would visit the pipeline route the year following construction to assess the effectiveness of revegetation, erosion controls, and other environmental protection planning measures. Once stable ground cover has been established, Westcoast would undertake routine surveillance flights over the pipeline right-of-way. More intensive checks for surface instability and leaks would be undertaken as required.

Westcoast undertook to provide to the Board a post-construction environmental report following construction, as well as environmental monitoring reports one and two years following construction.

Views of the Board

With respect to environmental issues associated with the proposed construction and the recommended mitigative measures, the Board is of the view that an EIL might assist Westcoast in focusing its inspection efforts during construction on areas requiring attention and in implementing an effective environmental monitoring program. Therefore, the Board will require Westcoast, as a condition to the Order, to submit an EIL in advance of the commencement of construction.

In terms of post-construction monitoring, the Board will also require Westcoast, as a condition to the Order, to file a post-construction environmental report within six months of the date that leave-to-open is granted. The Board expects the report to address all the environmental issues that have arisen up to that time and also provide the status of each issue and the measures to be implemented for the resolution of any outstanding issues. The Board will require Westcoast to file a similar report, as a condition to the Order, by 31 December following each

of the first two full growing seasons after construction. The Board expects the reports to also address the recovery of the disturbed areas.

Overall, the Board is of the view that Westcoast's proposed programs for environmental inspection during construction, and for post-construction environmental monitoring are satisfactory to ensure adequate environmental protection.

5.6 Socio-Economic Effects

The Southern Mainline Looping will cross portions of private and Crown lands, including Indian Reserve lands. Westcoast indicated that it has discussed project-related employment and business opportunities with the local Indian Bands. Westcoast has agreed to promote local native employment and business opportunities. Westcoast undertook to provide to the Board monthly status reports on local and native employment, as well as a post-construction report including a discussion of any employment issues or problems that arose during construction.

The loops are located in reasonable proximity to communities. Given the short construction period and small workforce, Westcoast does not anticipate a significant effect on the local communities' services or facilities. Benefits to the local economy include the work crew's expenditures on accommodation, meals, entertainment and supplies. In addition, Westcoast has indicated that it would encourage local employment and purchase of goods and services.

Views of the Board

The Board is satisfied with the socio-economic information provided by Westcoast with regard to the potential effects which may result from the construction and operation of the proposed facilities and is satisfied with Westcoast's proposed mitigation measures.

With respect to local hiring, the Board is encouraged by Westcoast's commitment to take all reasonable steps to ensure that qualified, local labour is hired. However, the Board notes that the absence of criteria defining an acceptable level of local employment severely restricts Westcoast's ability to monitor and measure performance.

The Board is of the view that Westcoast's undertaking to provide monthly reports, as well as a final report on the size of the project labour force with respect to local, native and non-local components is adequate. These reports would include an assessment of the circumstances promoting or obstructing local and native employment. Such reports would provide one basis for measuring how well Westcoast is meeting its socio-economic commitments.

5.7 Summary of the Board's Findings

On the basis of the environmental information contained in Westcoast's application and evidence adduced during the GH-3-92 proceedings, the Board makes the following determinations:

(i) The Board is satisfied with the environmental and socio-economic information provided by Westcoast with regard to the potential effects which may result from the construction and operation of the proposed facilities and is satisfied with Westcoast's proposed mitigation measures and commitment to obtain necessary approvals. The Board is of the view that with Westcoast's proposed environmental protection measures, as well as its compliance with agency approvals, the project will create environmental effects of only a local and temporary nature. Should Westcoast's application be approved, the Board would condition the Order so as to ensure adherence with these proposed measures and necessary approvals.

(ii) Pursuant to s.12(c) of the EARP Guidelines Order the Board has determined that the actual and potential adverse environmental effects and social effects directly-related to those environmental effects of the project, as described in the application and at the hearing, would be insignificant or mitigable with known technology.

Economic Feasibility

The Board determined the economic feasibility of the proposed expansion by examining the likelihood that the facilities would be used at a reasonable level over their economic life. To assist in its examination, the Board considered several factors, and Westcoast submitted evidence addressing each of these factors.

Westcoast submitted that a positive long term outlook for gas demand in the markets to be served was supported by its forecast of a 40 percent growth in demand from 1992 to 2002 as discussed in Chapter 3 of these Reasons. This evidence demonstrated that the applied-for capacity on Westcoast's system will by required over the long term to serve growing gas demand in the market areas served.

The supply and deliverability forecasts discussed in Chapter 2 of these Reasons demonstrate that an excess of supply over capacity exists on the Westcoast system and that the expansion volumes can be accommodated.

With regard to firm service agreements, all available capacity is contracted for the 1992-93 contract year and the expansion capacity applied for is underpinned by ten-year firm service contracts. The majority of Westcoast's contracts are short-term renewable and thus offer no guarantee with respect to system utilization in future years. Westcoast stated that it feels confident that shippers will continue to renew contracts on the system given the importance of access to transportation to marketing gas. As such, Westcoast submitted that the risks associated with the high level of short term renewable service contracts are low.

The proposed facilities are expected to increase the Zone 4 average rate base by 15% for the 1992-2002 period. Westcoast submitted that the resulting toll increase would be 1.5% initially, and would average .96% for the 1992-2002 period. An increase in tolls of this magnitude is unlikely to affect the renewal of transportation contracts.

Views of the Board

The Board is satisfied that the evidence demonstrates that the proposed expansion is economically feasible, given that there is a strong likelihood that the facilities will be used at a reasonable level over their economic life.

The Board is of the view that the fully contracted existing capacity on Westcoast's Southern Mainline and the 10-year firm service agreements underpinning the expansion capacity demonstrate the need for these facilities. The Board is satisfied that this evidence, taken together with the evidence on the adequacy of reserves and productive capacity, the existence of a viable long-term market for the gas, and the existence of a queue of service requests demonstrate that this project is economically feasible.

Disposition

The foregoing chapters constitute our Decision and Reasons for Decision in respect of the application heard by the Board in the GH-3-92 proceedings. The Board has found that the proposed facilities are and will be needed in the present and future public convenience and necessity. The Board has issued Order XG-25-92, which is found in Appendix III. The Board's approval is subject to the conditions outlined in Order XG-25-92.

C. Bélanger

Presiding Member

A. Côté-Verhaaf

Member

R.L. Andrew

Member

Calgary, Canada

July 1992

Summary of the Department of Fisheries and Oceans Instream Construction Windows

The following summarizes DFO's instream construction windows for the proposed stream crossings in respect of Westcoast's Southern Mainline Loop proposal, as set out in a letter from DFO to the Board, dated 22 May 1992:

LOOP	STREAM	WINDOW
Australian	Kersley N&S	June 15 - October 30
	Menzinger N&S	June 15 - October 30
100 Mile House	1	MELP
	2	MELP
Nicola	1	July 15 - October 1
	2, 3, 4, 6	July 15 - October 1
	Guichon Irrigation Ditch	open
	7 Groundwater tributary	July 15 - August 15
	8 Relic Channel	July 15 - August 15[1]
	9 Nicola River	July 15 - August 1[2]
	10 Irrigation Ditch	July 15 - August 15[2]

To reduce the potential for downstream sedimentation, the windows for the Nicola Loop streams 1, 2, 3, 4, 6 and the Australian Loop streams may be extended beyond the above noted dates if high precipitation levels have kept the watercourses flowing.

1 If there is no return flow to the Nicola River, a timing window will not be in effect.

2 This timing window could be extended if directional drilling were to be used.

List of Issues

1. The adequacy of gas supply to be transported by the pipeline.

2. The reasonableness of Westcoast's demand forecast.

3. The necessity of the proposed facilities and the firmness of demand for service and related contracts.

4. The likelihood of the facilities being used at a reasonable level over their economic life and a determination of the likelihood of the demand charges being paid.

5. The appropriateness of the design of the proposed facilities and the consistency of that design with the long-term requirements.

6. The completeness and effectiveness of Westcoast's early public notification process.

7. The appropriateness of the location of the proposed looping in light of emerging urban growth and land use patterns.

8. The potential environmental effects and the directly related socio-economic effects of the proposed facilities during and after construction.

9. The appropriate terms and conditions to be included in any certificate or order which may be issued.

Board Order XG-25-92

ORDER XG-25-92

IN THE MATTER OF the *National Energy Board Act* ("the Act") and the regulations made thereunder; and

IN THE MATTER OF an application, pursuant to section 58 of the Act, by Westcoast Energy Inc. ("Westcoast"); filed with the Board under File No.: 3400-W005-58.

B E F O R E the Board on 9 July 1992.

WHEREAS by application dated 31 December 1991, Westcoast applied pursuant to section 58 of the Act for approval to add certain facilities to its pipeline system;

WHEREAS the Board held a public hearing to consider Westcoast's application;

WHEREAS pursuant to the *Environmental Assessment and Review Process Guidelines Order* (" the EARP Guidelines Order "), the Board has performed an environmental screening and has considered the information submitted by Westcoast and evidence adduced at the hearing;

WHEREAS the Board has determined, pursuant to paragraph 12(c) of the EARP Guidelines Order, that the potentially adverse environmental effects, including the social effects directly related to those environmental effects, which may be caused by these facilities are insignificant or mitigable with known technology;

AND WHEREAS the Board has examined the application and considers it to be in the public interest to grant the relief requested therein;

IT IS ORDERED THAT the facilities listed in Schedule A, attached to and forming part of this Order, are exempt from the provisions of sections 30, 31 and 47 of the Act, upon the following conditions:

1. (a) Westcoast shall cause the applied-for facilities to be designed, manufactured, located, constructed and installed in accordance with those specifications, drawings, and other information or data set forth in its application, or as otherwise adduced in evidence before the Board, except as varied in accordance with paragraph 1(b) hereof.

   (b) Westcoast shall cause no variation to be made to the specifications, drawings or other information or data referred to in paragraph 1(a) without prior approval of the Board.

2. Westcoast shall implement or cause to be implemented all the policies, practices, recommendations, procedures and undertakings for the protection of the environment included in its application, its Procedures Manual For Environmental Engineering, September 1988, or as otherwise adduced in evidence before the Board in the GH-3-92 proceedings.

3. Westcoast shall construct all stream crossings within identified Department of Fisheries and Oceans ("DFO") and Ministry of Environment Lands and Parks ("MoELP") instream construction windows. If construction occurs outside these windows, Westcoast shall obtain the consent of DFO to this construction and shall advise the Board of the details of this construction.

4. Westcoast shall, at least 7 days prior to the commencement of construction of the applied-for facilities, file with the Board a detailed construction schedule or schedules identifying the major construction activities.

5. Westcoast shall, at least 15 days prior to the commencement of construction of the applied-for facilities, file with the Board a copy of its Environmental Issues List, prepared in accordance with section 28(1)(a) of the Board's *Onshore Pipeline Regulations* (SOR/89-303). If additional issues arise during construction, Westcoast shall file an updated Environmental Issues List in accordance with section 28(2) of the Board's *Onshore Pipeline Regulations*.

6. During construction, Westcoast shall file updated construction schedules, if any significant change to the schedules provided pursuant to paragraph 4 occur.

7. Westcoast shall, within six months of putting any of the applied-for facilities into service, file with the Board a report providing a break-down of the costs incurred in the construction of the facilities, including reasons for significant differences from the estimates provided in the application.

8. Westcoast shall file with the Board post-construction environmental reports in accordance with section 58 of the Board's *Onshore Pipeline Regulations*.

9. Unless the Board otherwise directs prior to 31 December 1993, this Order shall expire on 31 December 1993 unless the construction and installation with respect to the applied-for facilities has commenced by that date.

NATIONAL ENERGY BOARD

J.S. Richardson
Secretary

XG-25-92

Schedule A

Westcoast Southern Mainline Looping

Loop Section	Milepost Locations	Est. Direct Cost (1991 base, $000s)
Kersley	311.37 - 317.66	
100 Mile House	413.42 - 419.54	
Nicola	521.26 - 527.45	
Kingsvale	537.82 - 539.54	
Total		39 477

XG-25-92